

# NASA TECH BRIEF

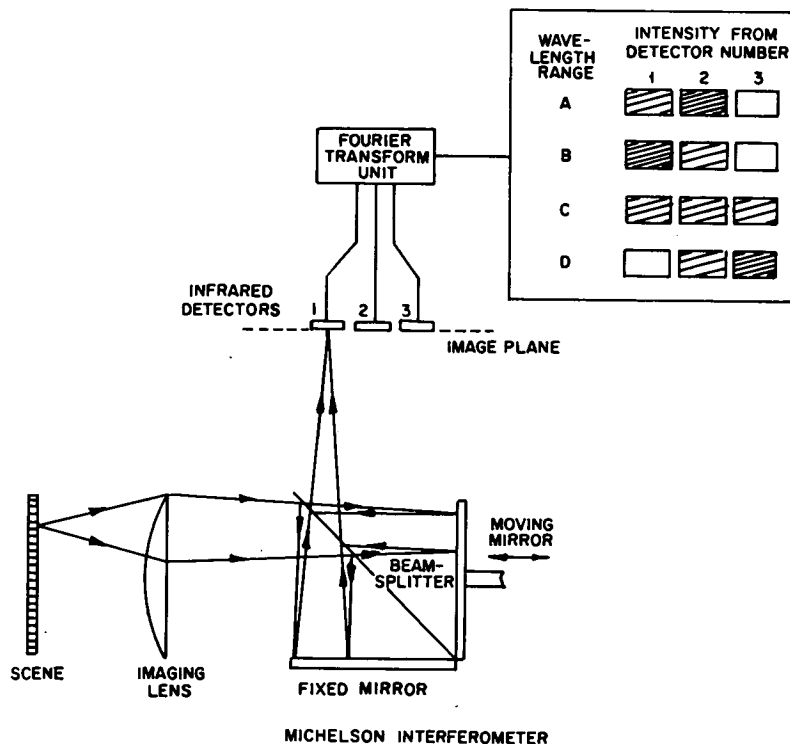
## *Manned Spacecraft Center*



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### Multispectral Infrared Imaging Interferometer

IMAGE DISPLAY UNIT  
(FOUR THREE-ELEMENT IMAGES ARE SHOWN)



#### The problem:

Infrared images have been produced by placing an infrared filter over a detector. A different filter was required for each wavelength and viewing the image at a different wavelength required changing the filter. Simultaneous viewing of a scene at different wavelengths was impossible.

#### The solution:

A method of simultaneously viewing infrared images at many different wavelengths has been developed. The invention consists of an imaging lens, a Michelson interferometer, an array of infrared detectors, electronic data processing equipment for Fourier transformation of the detector signal, and an image display unit.

(continued overleaf)

### How it's done:

The multispectral infrared imaging interferometer is shown: Light from the source is passed through a Michelson interferometer and imaged on the detector array, each element of which views a small portion of the scene. When the interferometer is operated, each detector receives an interferogram which is mathematically related to the spectrogram of the light. The interferograms are digitally sampled, transferred to the Fourier transform unit, and mathematically transformed to spectrograms. The intensity from each detector at a particular wavelength can now be determined and the data used to construct a picture of the object.

This information may be of interest in earth resources applications, non-destructive testing and medical diagnosis.

### Note:

Requests for further information may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center, Code JM7  
Houston, Texas 77058  
Reference: TSP71-10325

### Patent status:

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